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Two new Stratiomyinae, including *Panamamyia* gen. nov., from the Neotropical Region (Diptera: Stratiomyidae)

NORMAN E. WOODLEY

Systematic Entomology Laboratory, PSI, ARS, USDA, Smithsonian Institution NHB-168, P O Box 37012, Washington, DC 20013-7012, USA
E-mail: norman.woodley@ars.usda.gov

Abstract

A new species of *Hoplitimyia* James, *H. inbioensis* **sp. nov.**, is described from Costa Rica**.** A new genus, *Panamamyia* **gen. nov.** (type species *P. silbergliedi* **sp. nov.**) is described from Panama. Both taxa are very rare in collections, not having been taken during extensive Malaise trap surveys in Costa Rica.

Key words: Diptera, Stratiomyidae, *Hoplitimyia*, *Panamamyia*, new genus, new species, Costa Rica, Panama

Introduction

A taxonomic treatment of the taxa of the subfamily Stratiomyinae found in Central America and Mexico was published by James & McFadden (1979), but the scope of this work was relatively restricted, being based on a limited amount of material largely borrowed from institutions. Since that time, a number of collecting efforts have significantly added to the available material of Stratiomyidae from the region. Both new species described in this paper are rare taxa that have not been collected by extensive Malaise trap surveys that have been undertaken in Central America. One represents a new genus that is being described for inclusion in an upcoming manual of the Diptera of Central America.

Materials and Methods

Morphological terminology follows McAlpine (1981). Despite examination of unsorted Stratiomyidae from many institutions over the years, only one contained a specimen of one of the species described in this paper, the Instituto Nacional de Biodiversidad, Santo Domingo, Costa Rica (INBio). All of the other specimens were collected by myself, and are deposited in the National Museum of Natural History, Smithsonian Institution, Washington, D.C. (USNM).

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Genus *Hoplitimyia* James

Hoplitimyia James, 1934: 443. Type species, *Stratiomys constans* Loew, by original designation.

Remarks. *Hoplitimyia* is a distinctive genus of soldier flies similar to *Stratiomys* Geoffroy, but its species are generally smaller and slightly more slender in general habitus. The genus ranges from the southern United States south to Argentina. All of the species resemble dark vespoid, particularly polybiine, wasps in having elongate antennae and a dark costal region of the wing. They differ from *Stratiomys* in having the face rounded in lateral view, and having the antennal flagellum spindle-shaped rather than cylindrical. There are ten described species that are considered valid (Woodley, 2001), but it is likely that additional synonymies exist because the species have been defined by color patterns that are quite variable in at least some of the species.

***Hoplitimyia inbioensis* sp. nov.**
(Figs. 1–7)

Diagnosis. *Hoplitimyia inbioensis* (Fig. 1) differs from all other known *Hoplitimyia* except *H. taurina* James in having scutellar spines that are at least 1.5 times as long as the scutellum. All other species have the spines at most subequal to the length of the scutellum, but in most taxa they are distinctly shorter. *Hoplitimyia inbioensis* is very similar to *H. taurina* in general appearance, but is distinguished from it by having the scutellar spines directed posterodorsally in the same plane as the scutellum rather than being erect, and by having a vertical pale yellow band on the anterior part of the anepisternum (Figs. 2, 3) that extends from the posterior edge of the anterior spiracle to the front coxa. This area is completely dark in *H. taurina*. Also, the silvery vestiture of the abdominal tergites is brighter in *H. taurina*, composed of longer hairs, and is confined to tergites 2 and 3.

Description. *Male.* Head black, with lateral facial margin pale yellowish from about level of antenna ventrally, and yellowish in an area encompassing the suture between the face and oral sclerites, the latter with a black spot at the apex of the oral margin. Postocular orbit with very narrow yellowish coloration near middle. Sparse silvery pilosity present, especially evident on frons, face and genal region, longest on gena. Tomentum sparse, except on posterior surface of head where it is grayish, and along posterior margin of eye where there is a narrow silvery-white strip below middle. Antenna with scape very elongate (Fig. 3), about two-thirds length of flagellum, slender but becoming slightly thicker apically, dark yellow becoming gradually brownish apically, and with very short, inconspicuous pilosity that is closely appressed to surface; pedicel and flagellum brownish black, pedicel with dark hairs especially evident near apex, flagellum with velvety vestiture. Labella shiny black, more brownish centrally in lateral view, sharply pointed apically, with very short, sparse pilosity. Palpus inconspicuous, pale yellow.

Thorax (Fig. 1) dull black with postpronotal lobe, postalar callus, a narrow band on the anepisternum extending from the posterior margin of the anterior spiracle to the posterior margin of front coxa, tiny marking on the posterodorsal corner of the anepisternum, and the medial area of the laterotergite pale greenish yellow. Some small pleural regions, especially around sutures below the wing base, more brownish. Scutellum (Fig. 1) entirely pale yellowish with posterior margin and spines vaguely brownish. Scutum with a mixture of appressed whitish and brownish pilosity, with two faint vittae on anterior 4/5 of presutural region. Pleura with generally distributed grayish white tomentum and whitish hairs on propleuron, posterior half of anepisternum, most of katepisternum, anterior two-thirds of anepimeron, and lateral half of laterotergite. Legs dark, dull yel-

low with coxae and trochanters more brownish; basal half of front femur, basal half and dorsal part of middle femur, and much of hind femur more brownish, the darker areas appearing more shiny; tibiae vaguely darker on basal halves. Wing (Fig. 2) slightly brownish with anterior portion dark brown, the dark area encompassing cells c, sc, br, bm, anterobasal part of cu*p*, entire discal cell, r_1, r_{2+3}, and anterior two-thirds of r_{4+5}, with the brown coloration not quite reaching wing apex; dark areas of wing with distinct microtrichia, other areas bare. Vein R_4 absent. Halter with knob pale green, stem brownish.

Abdomen (Fig. 1) dull black, membrane in front of first tergite paler, extreme lateral margins of tergites and posterior margin of tergite 5 vaguely brownish, and lateral part of sutures between tergites 2–3, 3–4, and 4–5 very narrowly pale brown. Tergites with general vestiture of short, sparse, pale hairs; tergites 2 and 3 and anterior part of 4 with very dense grayish-silver tomentum covering most of surface (best seen with anterior lighting); remainder of tergite surfaces with inconspicuous dull tomentum that gives the abdomen a matte appearance. Sternites similar to tergites in color, but without silvery tomentum; posterior half of sternite 1 with a pale green band that narrows slightly at middle, anterior third or so of second sternite with greenish band that is widest medially, and posterior margin of sternite 3 and extremely narrow margin of sternite 4 pale greenish; lateral margin of tergite 4 and lateral and posterior margins of sternite 5 pale but not as conspicuously green. Gonocoxites with lateral margins evenly rounded (Fig. 4); gonocoxal apodemes absent; apex of hypandrium rectangularly produced, slightly rounded posteriorly, very concave dorsally. Gonostylus displaced ventrally, triangularly produced on medial margin. Phallic complex (Fig. 5, 7) trifid, median lobe truncate posteriorly and slightly longer than lateral lobes, which are tapered posteriorly; attachment structure narrowed medially. Epandrium (Fig. 6) convex with lateral and posterior margins evenly rounded.

Length 8.4–9.0 mm.

Female. Unknown.

Specimens examined. Holotype ♂, COSTA RICA: Herédia Province, Santo Domingo, INBio Parque, 09°59'N, 85°05'W, 1150 meters, 8 August 2001, N. E. Woodley (USNM). Paratype ♂, COSTA RICA: Puntarenas Province, Albergue Cerro de Oro, L_S 279650_518450, 150 meters, E. Fletes (INBio, CRI002339742).

Etymology. The species epithet is named for the type locality, INBio Parque, the public park at the Instituto Nacional de Biodiversidad at Santo Domingo in Herédia Province, Costa Rica. This park demonstrates the floral and faunal diversity of Costa Rica.

Remarks. The holotype specimen was collected sitting on a leaf in the sun, looking very much like a vespid wasp.

As noted in the diagnosis, this species is very similar to *Hoplitimyia taurina*. These two species are more slender than most other species of *Hoplitimyia* and have less conspicuous abdominal coloration. The general appearance of these two species is somewhat similar to that of *H. clavata* James from Ecuador, but the latter has a more elongate abdomen and the wing is not darkened on the anterior portion.

A very recently collected female specimen may be the female of this species. Its collection data is: BOLIVIA: Santa Cruz Department, Florida Province, Refugio Los Volcanes, 4 km N of Bermejo, 18°06'S, 63°36'W, 1045 meters, 31 October 2007, N. E. Woodley (USNM). This specimen has the characteristic yellow band on the anepisternum as found in males and is otherwise similar except for sexual dimorphism. It lacks the silvery tomentum on the abdominal tergites, but this is likely a feature found only in males. However, since there is so much distance between collecting sites of the Costa Rican males and this female specimen, and there are so few known specimens, the taxonomic status of this female specimen remains uncertain.

***Panamamyia* gen. nov.**

Type species, *Panamamyia silbergliedi* **sp. nov.**, by present designation.

Diagnosis. I regard the structure of the antennal flagellum (Figs. 10, 13), with the sixth flagellomere as wide or wider than the fifth, and nearly as wide as flagellomeres 1–4, as autapomorphic for this genus. Also, the moderately elongate abdomen with nearly straight, very gradually posteriorly tapering lateral margins is probably autapomorphic as well (Figs. 8, 11).

In the key of James & McFadden (1979) this genus keys to *Odontomyia* Meigen. *Odontomyia* differs from *Panamamyia* by having a less strongly produced face, a much more slender sixth antennal flagellomere, and the abdomen less slender with more rounded margins. I regard the reduction in size of the fifth and sixth flagellomeres in *Odontomyia* as apomorphic for that genus, a character state not found in *Panamamyia*. *Panamamyia* also bears some resemblence to *Psellidotus* Rondani (formerly known as *Labostigmina* Enderlein), but the latter has the apical antennal flagellomeres more closely associated and indistinctly separated from each other, and an abdomen similar to that noted for *Odontomyia*.

Description. *Male.* Head with eyes strongly holoptic (Fig. 8), upper frons reduced to a very narrow triangle, lower frons and face conically produced with rounded apex, and antenna inserted on dorsal part of this prominence. Ocellar tubercle slightly prominent. Gena only slightly visible in lateral view, occiput not visible in lateral view. Eye bare, ommatidia on upper two-thirds much larger than lower ones (Fig. 10). Antenna (Figs. 10, 13) slender, pedicel slightly longer than scape; flagellum slender, parallel-sided with six distinct flagellomeres, fifth and sixth not strongly differentiated from preceding ones, sixth subequal to fourth, fifth about one-third length of sixth. Palpus small, cylindrical, about three times longer than its diameter, apparently one-segmented.

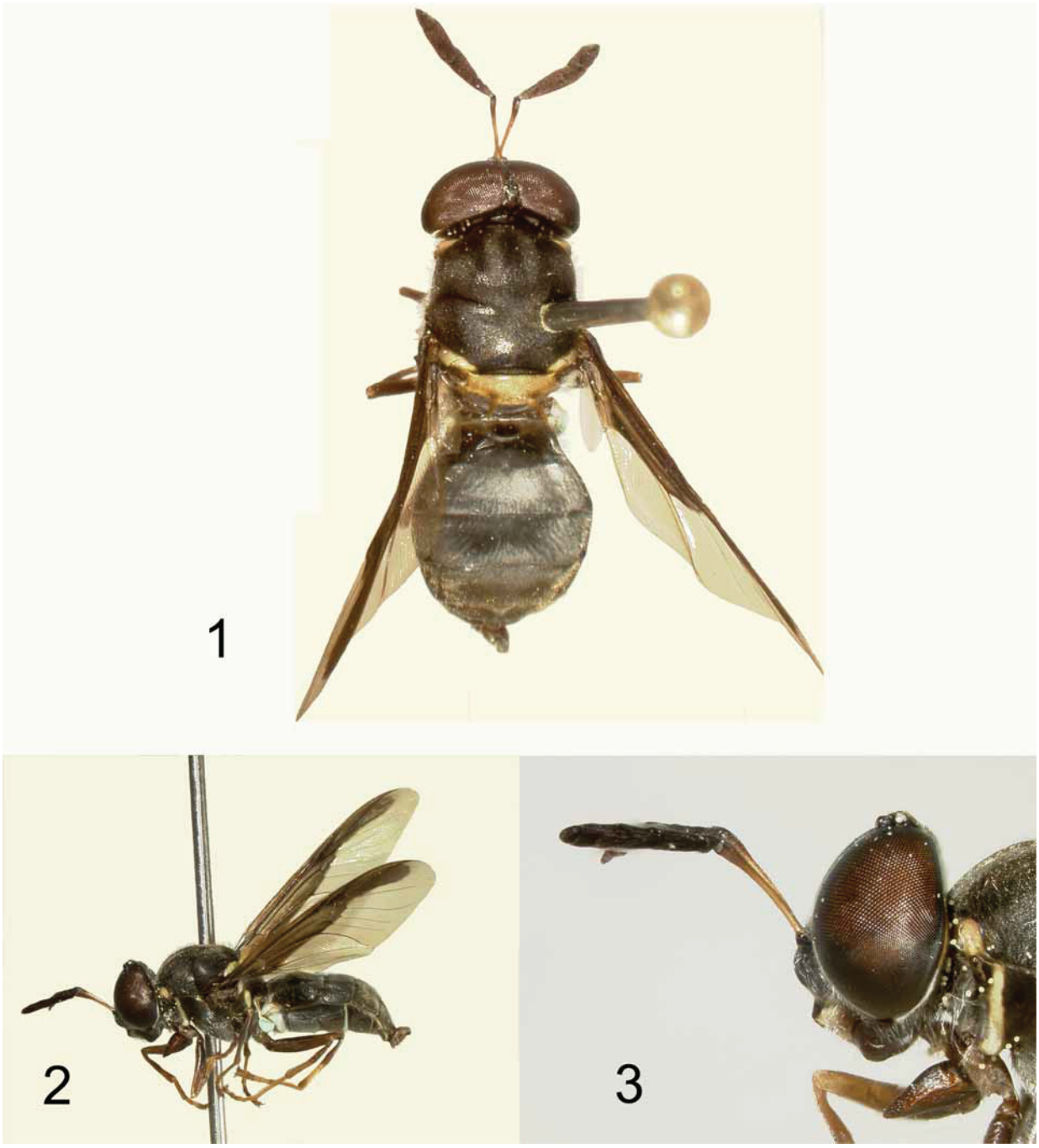
Thorax with subscutellum developed, thinly tomentose, and with a few upwardly-directed hairs at lower lateral corners. Scutellum (Figs. 8, 11) trapezoidal with two short conical spines about one-fourth length of scutellum and separated by about twice the length of one spine. Legs unremarkable, without significant modifications. Wing with microtrichia virtually absent from entire surface; R_{2+3} originating well beyond distal margin of discal cell, R_4 absent, crossvein r-m present, short; discal cell small; M_1 and M_3 faint beyond bases at discal cell, no veins reaching posterior margin of wing; about distal third of A_1 faint.

Abdomen (Fig. 8) approximately two times longer than wide, very gradually tapering posteriorly from second segment, and flattened dorsally.

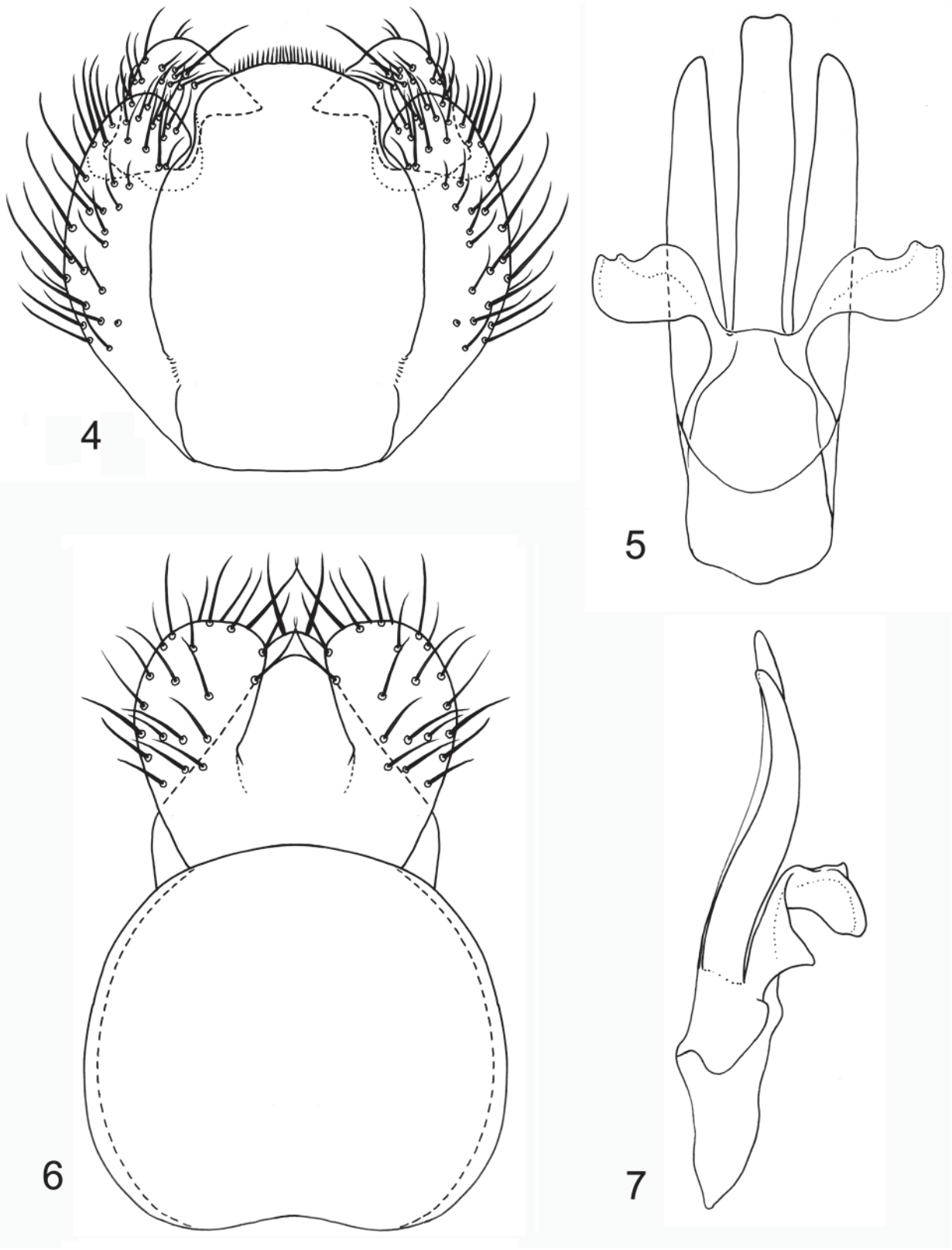
Female. Differs from male as follows: Head (Figs. 11, 13) with eyes smaller than male, strongly dichoptic, upper frons parallel-sided, 0.44 width of head, with medial elevated ridge in lower part that is very narrowly grooved medially (Fig. 13); small depressions present on either side of this ridge, with small protuberances on each side of depressions; lower frons and face with conical projection more developed than in male. Gena and occiput visible in lateral view, forming a broad border on lower and posterior margins of eye that is sharply margined above and more rounded ventrally. Eye bare, ommatidia uniform in size, small.

Abdomen (Fig. 11) slightly more strongly tapering posteriorly. Cercus two-segmented.

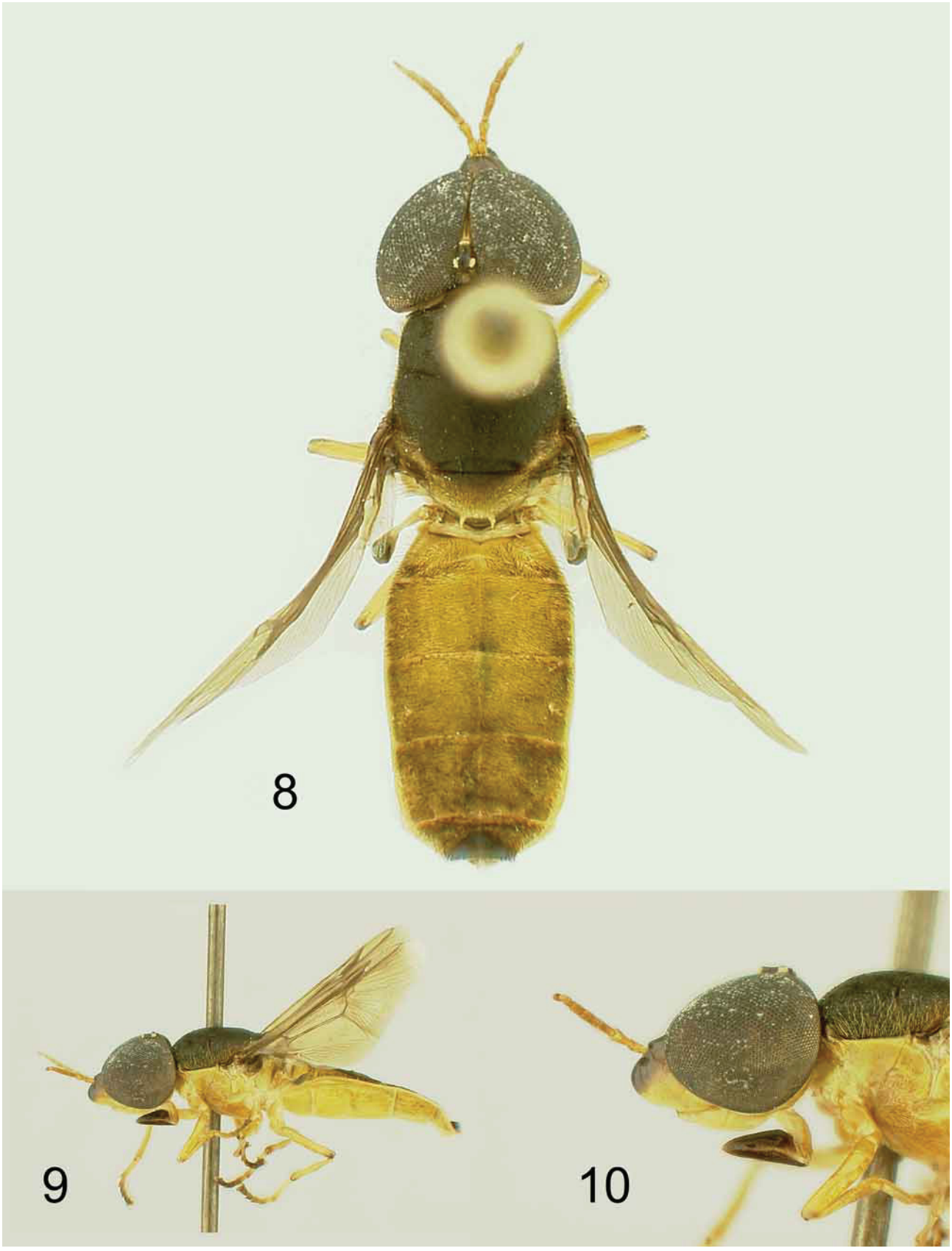
Etymology. This genus is named after Panama, the only country from which specimens are known; feminine in gender.



FIGURES 1–3. *Hoplitimyia inbioensis*, **sp. nov.**, male holotype. 1, dorsal view. 2, lateral view. 3, lateral view of head and antennae.



FIGURES 4–7. *Hoplitimyia inbioensis*, **sp. nov.**, male terminalia of paratype. 4, genital capsule, dorsal view. 5, phallic complex, dorsal view. 6, epandrium and post-genitalic structures, dorsal view. 7, phallic complex, lateral view.



FIGURES 8–10. *Panamamyia silbergliedi*, **gen. nov., sp. nov.**, male holotype. 8, dorsal view. 9, lateral view. 10, head and antennae, lateral view.

FIGURES 11–13. *Panamamyia silbergliedi*, **gen. nov., sp. nov.**, female paratype. 11, dorsal view. 12, lateral view. 13, dorsolateral view of head and antennae.

***Panamamyia silbergliedi* sp. nov.**
(Figs. 8–17)

Diagnosis. *Panamamyia silbergliedi* is the only known species in the genus. It may be separated from other Neotropical Stratiomyinae by the characters noted in the generic diagnosis.

Description. *Male.* Head dark yellowish with upper occiput, ocellar tubercle, and dorsal part of frontofacial prominence black, lateral margins of face sometimes with vague darkened areas. Pale yellowish pilosity extremely short and sparse, most easily visible on lower gena and lower occiput; some very short dark hairs present posterior to ocellar tubercle and along upper frons. Little tomentum present except on posterior surface of head where it is grayish. Antenna dark yellow, last three flagellomeres very slightly darkened, scape and pedicel with short blackish hairs. Labella shiny black, sharply pointed apically (Figs. 9, 10), with very short, sparse pilosity; remainder of proboscis yellowish. Palpus pale yellow.

Thorax dark yellow with most of scutum and basal part of scutellum dull black, and subscutellum and central part of mediotergite brownish; pleura with vague pale greenish areas. Scutum and disc of scutellum with surface densely granulate. Scutum with short, inconspicuous appressed pilosity, lateral margins of scutum and scutellum with more erect, longer golden hairs; postalar wall and scutellum with black, slightly scale-like setae. Pleura with golden pilosity that is longest and most easily viewed on posterior half of anepisternum, anterior part of anepimeron, and lateral part of laterotergite, the last also with a few dark hairs. Legs dark yellow with extreme apices of femora blackish and tarsi with tarsomeres 3-5 brownish; legs with inconspicuous pale pilosity, longest and most easily visible on posterior faces of mid and hind femora. Wing (Fig. 9) with even light brown infuscation, but apex paler (visible to the naked eye); wing virtually bare of microtrichia. Calypters dark infuscated with dark hairs along margins. Halter with knob dark brownish, stem dark yellow.

Abdomen (Figs. 8, 9) completely dark yellow except for small dark more or less triangular spot at apex of fifth tergite, and small sixth tergite darkened; entire dorsum appearing brownish due to dense, evenly distributed vestiture of black, slightly scale-like hairs. Sternites with very short, inconspicuous, semi-appressed pale pilosity. Terminalia with gonocoxites (Fig. 14) tapering anteriorly and with lateral margins rounded; gonocoxal apodemes short, near middle of gonocoxites and directed anteromedially; apex of hypandrium slightly produced, rounded posteriorly. Gonostylus arcuate, apex acute. Phallic complex (Figs. 15, 17) trifid with median lobe parallel-sided, slightly rounded at apex, and longer than lateral lobes which are tapered posteriorly; attachment structure reduced medially. Epandrium (Fig. 16) convex, subquadrate with rounded corners.

Length 9.8-10.2 mm.

Female. Differs from male as follows: Head with yellow coloration on lower part paler than that on dorsal areas; dorsal part of vertex behind medial eye margin vaguely infuscated with brown. Tiny silvery tomentose spot present just dorsal to anteriormost point of eye.

Thorax with pilosity on scutum paler, concentrated into a pair of submedial longitudinal vittae; without longer golden hairs at lateral margins; postalar wall with pilosity less conspicuous, mostly pale; pilosity of pleura shorter, less erect. Legs with darkened tarsomeres more blackish in color. Halter knob dull greenish.

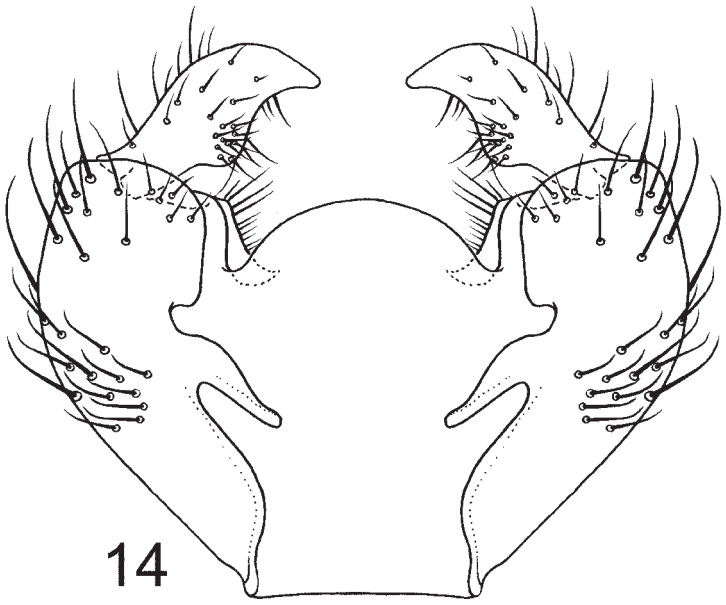
Abdominal tergites dark brown with pale narrow lateral margins. Cercus with apical segment short ovoid, about two-thirds length of basal segment, dark brown.

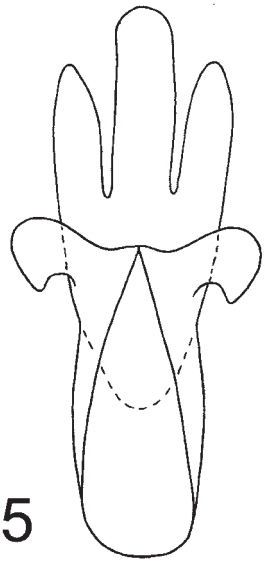
Length 10.3 mm.

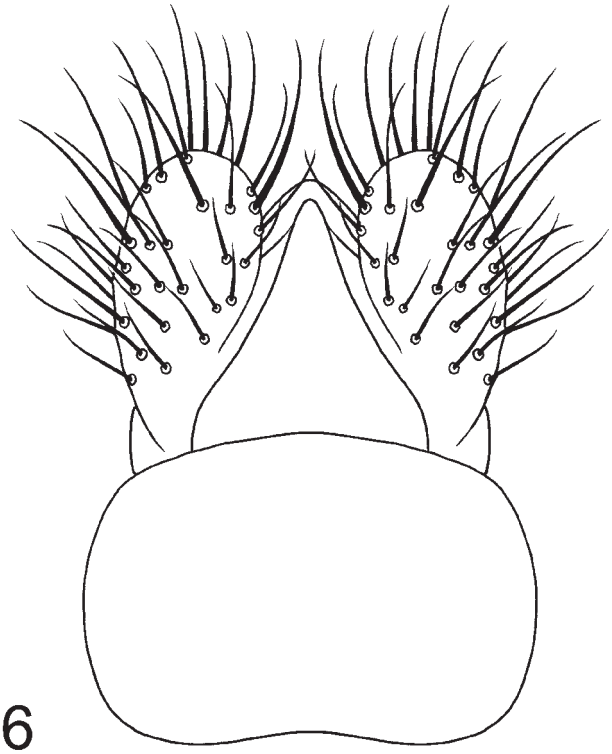
Specimens examined. Holotype ♂, PANAMA: Canal Zone, Barro Colorado Island, 15 July 1978, N. E. Woodley, at light (USNM). Paratypes: 1♂, same data as holotype (USNM); 1♀ same data except 10 July 1978, and not collected at light (USNM).

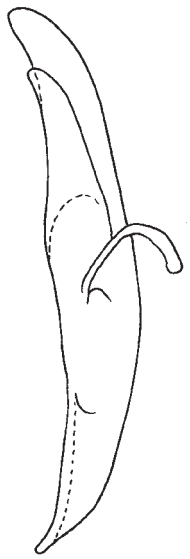
Etymology. The species epithet is dedicated to Robert Silberglied (1946-1982), my first advisor at Harvard University who encouraged and facilitated my summer stay on Barro Colorado Island in 1978.

Remarks. This new genus is somewhat enigmatic among Stratiomyini because it has antennal structure that is similar to *Odontomyia* and related genera that have six distinct flagellomeres, but its general appearance is more similar to species of *Promeranisa* Walker and *Rhingiopsis* Röder. However, both of these genera have the antennal flagellum with five flagellomeres.









FIGURES 14–17. *Panamamyia silbergliedi*, **gen. nov., sp. nov.**, male terminalia of holotype. 14, genital capsule, dorsal view. 15, phallic complex, dorsal view. 16, epandrium and post-genital structures, dorsal view. 17, phallic complex, lateral view.

During a three month stay on Barro Colorado Island, Panama from late May to early September in 1978, I collected the three specimens of the type series over a short six day period in July. I have not seen any additional specimens despite having sorted through hundreds of Costa Rican Malaise trap samples from low elevation localities and sorted the entire stratiomyid collection at INBio. It is possible that the species is associated with canopy tree holes or some other limited habitat. Another Neotropical stratiomyine genus, *Zuerchermyia* Woodley, has larvae that are found in tree holes (Yanoviak, 2001) and adults are quite rare in collections.

Acknowledgments

I am very grateful to the late Robert Silberglied who encouraged and facilitated my three month trip to Barro Colorado Island, Panama during 1978 when he was my graduate advisor. I am also grateful to Manuel Zumbado (INBio) for expediting loans of material in his care. Taina Litwak prepared the genitalia drawings. Owen Lonsdale (Smithsonian Institution) and Steven Lingafelter and Allen Norrbom (Systematic Entomology Laboratory, USDA) provided reviews of the manuscript.

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